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Enhancing ICT skills: the how, who and when – illustrations from the JUBILEE project

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This article reports on findings from the first cycle of the three year JUBILEE (JISC User Behaviour in Information-seeking: Longitudinal Evaluation of EIS) project, being undertaken at the Information Management Research Institute at the University of Northumbria, in respect of the degree to which students and academics in Higher Education lack the necessary skills to take full advantage of EIS. The skills are examined in subsets: IT literacy skills; information searching skills; evaluative & critical skills; and information handling skills. In addition there is discussion on how best to upskill students and at what point in their academic careers. Another debate, common at several JUBILEE case study sites, focuses on whether such upskilling is better delivered by academics or LIS personnel.

JUBILEE

JUBILEE (JISC User Behaviour in Information seeking: Longitudinal Evaluation of EIS) is funded by the JISC for three years under its call on Monitoring and Evaluating User Behaviour in Information Seeking and Use of Information Technology and Information Services in UK Higher Education (JISC Circular 1/99). It is investigating Strand D: A Qualitative Longitudinal Monitoring of EIS Use. JUBILEE seeks to predict, monitor and characterise information-seeking behaviour in relation to Electronic Information Services (EIS) and will provide illuminative and contextualised pictures built up over time, in

different disciplines. It will focus on users and non-users in actual sites (fieldwork institutions and Departments within them) and virtual sites (discipline/subject communities). Pictures will be built up using multi-layered user contexts taking account of the individual, the discipline, and the actual or virtual community. The project is designed in three annual cycles of investigation, with each cycle focusing on three disciplines, in six case study institutions. Data is being collected and analysed in each cycle, with findings being used to inform subsequent cycles, and to refine the resulting benchmarking tool. For the first cycle – recently completed – the focus disciplines were Health Sciences, Business Studies and English.

One theme which emerged from this cycle was the degree to which students and academics lacked the necessary skills to take full advantage of EIS.

These skills can be broken down into a number of subsets:

- IT literacy skills; basic knowledge of how to use computers

- information searching skills; knowledge of the range of EIS available and the ability to search databases and the Internet efficiently and effectively

- evaluative and critical skills; to make effective use of the information

- information handling skills; to cope with the vast amount of information available, and the rapid change in sources and services

This article outlines some of the findings from JUBILEE in respect of these subsets and raises questions as to how students might be upskilled, by whom and at what point in their academic careers.

IT literacy skills

It was felt by Library and Information personnel at most JUBILEE case study sites that incoming students were less IT-literate “*than the media would have us believe*” (LIS focus group member) and that ideally, when students applied to undertake a course, they should be told “*You are going to need to use these services ...we recommend that you have this level of knowledge of IT*” (LIS focus group member) so that those feeling ill-equipped might top up on their skills prior to entry.

It was posited that Arts students might be more disadvantaged than Science students because schools that were short of computer equipment and time would concentrate their skills training on those pursuing Science based courses. However, at one site an academic interviewed said that, every year, she put a list up for IT tutorials with two columns, one for those students who felt comfortable with IT and one for those who did not. Each year signees were split roughly 50:50 so it would seem from evidence to date that this hypothesis is not supported.

Basic knowledge of how to use computers

Inadequacy of student skills has a knock-on effect for academic staff because as several case study academics found

“there isn’t enough training or there isn’t any training, or there’s some, but little follow-up. Then the problems start when the students start using the system ...they tend to go to the tutor...you end up fending all the queries, dealing with passwords that don’t work. There is an IT helpdesk for students ...But, more often than not, they end up at your door” (Academic).

Skills sessions were held at all the case study sites but these often failed to reach those for whom they were intended because they were:

“... on a drop in as you need basis and some of the ones that need it are the ones who are computer shy and don’t go for it ...” (Academic)

In consequence it was possible for these technophobic students to proceed through their academic lives without progressing onto use of electronic information services for information seeking:

“... we’ve got ones who’ve got through to third year and have never used email so they are not even using the relatively simple functions, they were using word processing and nothing else...” (Academic)

The initial abilities of incoming students varied considerably, some never having used a computer, others being proficient. Their ability to pick up these new skills quickly, and their motivation to do

so, also varied. Some did remain computer phobic. These differences did not seem to be particularly linked to either age or discipline. Some school leavers were still not au fait with how to operate the system and, if they had learned computer skills during secondary education, seemed unable to successfully transfer these to their higher education.

Information searching skills

The JUBILEE project asked participants about the negative aspects of electronic information services and one frequent response related to information overload. As one academic said

“...I’m convinced it’s not now what you know it’s knowing how to find out because there’s too much information around ... you can’t hope to keep on top of it, but what you have to keep on top of is how to find the information...” (Academic)

For the computer shy or self-conscious student the barrier may be more than purely technological:

“... I’ve used a couple of databases, but if you don’t really know about them or how to use them it’s a bit difficult isn’t it? In fact I found it quite intimidating being in the computer room and getting somebody to come over and show me...” (Student)

“... There is a guy that sits on the front desk, isn’t there ... and he said that he gives lessons and he would do a group for me, however, its getting the people together ... It’s difficult, you only really want (training) when you really want to do (a search)...” (Student)

A Head of Department at one of the JUBILEE case study sites had identified an expertise gap in terms of her Health Studies students’ information-seeking abilities. She felt that this gap was probably widening so that certain students could be doubly disadvantaged, deficient not only in information seeking ability but also in **online** information seeking skill.

While more and more students have their own computers and are used to searching the Internet with tools such as AltaVista, in many cases they are using these search tools very crudely, for example, not using the advanced search options

including Boolean operators. Some acknowledge their shortcomings:

“... I can use the computer but I am really aware that there's a lot more that the computers can do that I just haven't a clue of how it works...” (Student)

When students obtained numerous, irrelevant results using such crude searching this contributed to their frustration and their feeling that it was all a waste of time. Often such students were not fully aware of the other types of EIS available, for example, the subject databases. If they were using EIS they sometimes lacked ability to discriminate between the good, bad and indifferent.

Critical and evaluative skills

“... I think, I cannot really evaluate if the information is high quality 'cos I'm not somebody who is so familiar with what is published ... (it) never seems to me like it's rubbish...” (Student)

The ability to exercise discrimination was dependant on the individual and how far they were through the course. As one English academic said,

“once you know some resources or once you're familiar with some good pages it'll take you to others. You need to be inside a little Web inside the Web - don't you?” (Academic).

Some sources, for example, online discussion groups about various authors, were deemed

“hobby-ist - from a scholarly point of view, a bit like film fans' Web sites” (English Academic).

But many of the students were still quite trusting of all EIS, although staff were trying to foster a critical attitude towards electronic media as well as books. A great concern with the academics was that students lacked the necessary critical and evaluative skills to use the information they obtained in an effective way.

The availability of EIS, particularly the Internet, makes this problem even more acute as it is so easy for students to obtain information nowadays. It is also harder to control the quality of this information. Library and Information Services can provide

some quality control via the services they buy and the links they place on the Library's WebPages but after that, once more, it is down to the individual.

Students at the JUBILEE case study sites, on the whole, used information from the Internet in a completely uncritical way. They assumed that it was correct; they didn't question it, validate it or check how current it was. As a quick fix they put such information into their assignments without critically assessing and discussing it. This was not so much plagiarism as possibly laziness, or the desire to get the work completed in time. This was particularly true for the weaker student. The stronger students tended to use a wider range of sources covering academic books and journals as well as the Internet and being more critical in their approach.

Educating people in these critical skills is the challenge. This is of even greater importance for Health Studies students who will be expected to provide evidence-based health care when they become practising professionals.

How?

Skill development is increasingly recognised as making a contribution to the careers of students. Some JUBILEE case study sites' support systems comprised a generic resource of study skills materials for use by both staff and students including Web pages and a range of printed guides covering various subjects. These resources, both Web-based and printed, could be used by academic staff in the delivery of key skills within the curriculum.

They were also available for students to use independently at their point of need. Themes covered included 'Using IT' and 'Information & Research'. New students were offered an induction session on the range of services on offer. Learning Advisers provided tailored information and literature searching sessions to students as part of their courses and also offered a programme of 'drop-in' information workshops. Support and guidance was given through both formal teaching sessions and access to enquiry services at their point of need.

Other methods employed at sites included:

- Classes organised on request, either within a course or to small groups.

- Provision of help and advice and tuition on a one-to-one basis
- Production of traditional leaflets as well as on-line tutorials.

However, the onus should not be on the individual to take advantage of these services since many did not take up these opportunities. To ensure that students do avail themselves of such services, classes need to be run as part of a course, properly integrated into courses – with skills assessed and accredited by forming a contribution to the students' course marks and final degree.

To motivate people to gain skills, their baser instincts have to be appealed to. It has to be demonstrated that there is something in it for them. E-mail has taken off because people can see the benefits to be derived from such a communication medium.

When?

As mentioned above, it is possible for some students to reach their third year and still lack the necessary ICT skills. While many case study sites ran skills modules in the 1st year, which at least got students onto the intranet to find institutional information, there were problems with classes being run for first year students at the beginning of the academic year because at this time students were overwhelmed with all they needed to absorb. Reinforcement classes were needed, for example, halfway through the first year and at the beginning of subsequent years because of the rapid changes in EIS.

The challenge is how ICT skills can be incorporated, themed, into the curriculum; how assignments can be set to get students to access specific EIS; and how students can be educated in citing electronic sources and with regard to what to look for in a validation. A further issue involves the best person to deliver ICT skills training. This was addressed differently not only between JUBILEE case study sites but also within case study sites where different schools adopted different approaches.

Who?

One ICT module in the School of English at one of the case study sites was delivered by an English

specialist, with the exercises that students had to do being subject-related. For example, if students were studying Salman Rushdie they were taught to use the Internet in relation to that particular topic so they could see it with more focus. This module was the subject of an internal debate about whether or not it could be taught by someone who simply had the ICT skills. The decision was reached that this was not the case and that what was needed was someone with the subject knowledge as well. So, at this case study site, Library personnel involvement in skills teaching for these English students took the form of awareness-raising rather than hands-on teaching.

However, LIS staff perception of such common level one ICT modules was that they failed to teach students the basics. They found that students did not know how to use a mouse or a keyboard at the end of it and some of the students actually pursued an evening class to top up these skills. Where there are large numbers of students in some schools, e.g. Health studies, it often proved impossible to train them in small groups and a degree of self-sufficiency was expected which disadvantaged the technophobic students.

Not all departments had compulsory ICT elements within their courses and, as mentioned earlier, the take-up of some ICT elements was voluntary.

From the academic perspective, if LIS offered ICT training as an optional course, the whole of the student base was not covered. The only way this could, effectively, be done was to *"latch it in with one of the courses"* (Academic) which necessitated a model where a department wrote a module, for example, 'Introduction to IT', 'Using IT' - within their context and this module was a compulsory component of the course.

What emerged as a theme from the first cycle of JUBILEE was the role of academic staff as gatekeepers, a role which may be viewed in a positive or negative light. Many academics interviewed during the JUBILEE project admitted they were still learning how to use EIS themselves and were concerned about their own inadequate ICT skills:

"it's clear, from just general conversations... that a number of colleagues were quite worried about the possibility that they might actually have to take students down to the IT suite and do this sort of thing with them.... there are issues around expertise and staff development in computing." (Academic).

One Business academic at a JUBILEE case study site described how the majority of staff in the school were still

“struggling with Word and Excel. Beginning to get on the Web. Beginning the search technique business but not being particularly effective” (Business academic)

If student skills training is down to the individual interest and expertise of lecturers, then there will be huge variations in how their students are accessing and using information. This raises equity of access issues since the type of ICT support a student receives should not be dependent on who is teaching them!

Who should provide ICT training – the School or the Library & Information Services - was a common debate at several JUBILEE case study sites. Some academics felt that, although departmental academic staff were running training sessions for their first year students to use the virtual learning environments (VLEs), this was what the Computing Services should be doing which added a further dimension to the debate. At several case study sites it appeared that setting up proper ICT training for students was not built into anybody's responsibility within the institutions. Whatever the decision taken, good liaison would seem essential so that all involved are aware of what others have on offer in developing ICT skills. Business academics at one JUBILEE case study site envisaged a quadripartite relationship of academics, Library & Information services, Computing & Technical support and administrators working together and drawing upon each others' skills.

The JUBILEE project is now entering its second cycle and examining three more disciplines in six different case study institutions. Since it is a longitudinal study, trends in ICT skills development should emerge. Perhaps the requirements of the National Curriculum, resulting in the exposure of secondary students to IT, will impact upon those entering HE. Similarly, it may be that government initiatives to counteract the digital divide will impact upon the non-traditional students entering

the HE arena. It will be interesting to see whether any of the cycle two sites are exploring channels to establish such a quadripartite liaison as that posited above. Several of the sites in cycle one admitted there was a tendency presently for departments to operate almost as cottage industries and that it was

“unusual to get into place something which involves academics across a number of disciplines working together to achieve agreed outcomes” (Academic).

However, some personnel at the sites were aware of the future possibilities:

“As a university, we want to ...be regarded as a community, rather than as a series of separate islands.” (Head of LIS)

If similar attitudes are displayed by LIS staff, academics, computer personnel and administrators at sites in cycle two and three, perhaps the Utopian vision may be realised within the JUBILEE project's lifespan?

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